Hydrocortisone in Minor Orthopædic Conditions

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DISILLUSIONMENT and disappointment frequently follow the initial enthusiasm for using a new therapeutic substance. Only prolonged and careful study by many workers reveals the true value and the limitations of a new drug. When Hench and his associates at the Mayo Clinic introduced cortisone for the systemic treatment of rheumatoid arthritis (Hench et. al., 1949) hopes ran high at first, but gradually it was realised that cortisone was no more effective than the humble aspirin tablet in the treatment of this chronic disease (Medical Research Council Report, 1955). Likewise, the local injection of cortisone and hydrocortisone was, at first, reported to produce beneficial results in many arthritic and soft tissue lesions (Hollander et al., 1951; Robecchi and Capra, 1953; Murley, 1954). Later reports, however, suggested that these injections were no more effective than injections of local anæsthetic agents or inert substances (Freeland and Gribble, 1954; Brockley, 1956). In order to help determine whether hydrocortisone was of any real value in orthopædic practice an investigation was carried out to study the effects of this hormone on a wide variety of minor orthopædic conditions.

TABLE I

CONDITIONS TREATED WITH LOCAL INJECTIONS OF HYDROCORTISONE.

CONDITION	NUMBER OF PATIENTS
"Frozen shoulder"	54
Supraspinatus tendinitis	33
Chondromalacia patellæ	26
Plantar fasciitis	15
"Tennis elbow"	14
Osteoarthritis of knee	13
Patello-femoral arthritis	10
Miscellaneous	35

TOTAL—200 consecutive patients.

MATERIAL AND METHODS.

During a period of two and a half years, two hundred patients, suffering from various non-rheumatoid lesions, were treated with local injections of cortisone or hydrocortisone (Roussell). The main conditions treated are shown in Table I. The miscellaneous group included arthritis of small joints, post-traumatic and post-operative stiffness of joints, and painful areas in the low back. Only thirty-four patients were given cortisone, all the rest receiving hydrocortisone.

Aseptic technique was employed when giving the injections. If only soft tissues were being injected, 1,000 units of hyalase were mixed with the 1-2 ml. of xylocaine (Duncan Flockhart) used to anæthetise the skin and deeper tissues. Before any injection was given an attempt was made by palpation and movement to localise

the painful area accurately. The preliminary injection of xylocaine often aided this localisation.

At the shoulder, the conditions treated were the acute (supraspinatus tendinitis) and the chronic ("frozen shoulder") phases of degenerative periarthritis. When manipulation of the shoulder was not employed, the injection was made in radial fashion from the lateral, subacromial aspect of the joint. The joint capsule, supraspinatus tendon and subacromial bursa were infiltrated with 50 mg. hydrocortisone. Four such injections were given at weekly intervals. If the patient originally had pain in the region of the long head of biceps, that area too was injected. If, however, a stiff shoulder was being manipulated under a general anæsthetic, one injection of 25-50 mg. hydrocortisone was made into the main joint cavity at the conclusion of the manipulation.

Three weekly intra-articular injections, each of 50 mg., were usually given for conditions affecting the knee joint. Painful heels (plantar fasciitis) received two injections of 25 mg. hydrocortisone, infiltrating the affected tissues on the plantar aspect of the calcaneum from the medial side. A single injection of 12.5-25 mg. into the painful area usually sufficed for so-called "tennis elbow."

Each patient was warned that he might experience some discomfort at the site of injection for 24-36 hours. The majority of patients were followed up for at least a month after the last injection had been given; those with chronic lesions were seen at intervals for up to one year.

TABLE II

Condition	Number Treated	Result		
		Good	Failed	Recurred
"Tennis elbow"	14	13	1	2
Plantar fasciitis	15	14	1	2
Chondromalacia patellæ	26	22	4	5
Supraspinatus tendinitis	33	31	2	3

Results—Good.

TABLE III

Condition	Number Treated	Result		
"Frozen shoulder"		Good	Fair	Failed
(a) without manipulation	29	1	19	9
(b) with manipulation	25	1	15	9
Osteoarthritis of knee	13	0	4	9
Patello-femoral arthritis	10	2	5	3

Results—Poor.

Results.

The principal findings are set out in Tables II and III. Many of the conditions treated are notorious for the variability of their clinical courses and consequently the assessment of results was extremely difficult. The main criterion of success employed when recording results was whether or not the patient obtained rapid relief from the symptoms of which he complained. A response to treatment described as "Fair" (Table III) means that one sympton, usually pain, had been

relieved, but that another symptom, mostly stiffness, was still present to a troublesome extent.

Good results were obtained in "tennis elbow," painful heel (plantar fasciitis), chondromalacia patellæ, and supraspinatus tendinitis. All the recurrences responded to further injections of hydrocortisone. Nearly one-fifth of the cases of chondromalacia patellæ recurred in from one to eight months. In this group the failures were either in very advanced cases or in those treated with cortisone. Many of the painful heels had failed to respond to conservative measures. The presence of a large spur on X-ray did not adversely affect the response to injection, but all such patients were provided with a cut-out rubber heel pad.

In those conditions in which hydrocortisone did not produce a good result (Table III), transient or permanent relief from pain was occasionally obtained, but stiffness was much more resistant to treatment. Although the number of patients which received cortisone was too small to draw any definite conclusions, the results appeared to be inferior to those obtained with hydrocortisone. The age or sex of the patient did not affect their response to treatment. No ill effects attributable to the hydrocortisone injections were observed.

Discussion.

The fact that only four conditions were rapidly relieved by hydrocortisone clearly indicates that this hormone is not a "cure-all" for vague orthopædic complaints. "Tennis elbow" and painful heel are well recognised conditions, and both responded rapidly to hydrocortisone when other methods of treatment had failed. It is unreasonable, however, to expect one or two injections to have any effect on gross bony abnormalities, such as calcaneal spurs. When a spur was present, the use of a cut-out rubber pad was continued in order to diminish repetitive trauma to the soft tissues on the plantar surface of the spur.

Less frequently recognised is the condition known as chondromalacia patellæ, in which the articular cartilage of the patella undergoes degenerative changes. Clinically the patient is usually a young girl who complains of intermittent pain, stiffness, and "catching" in the knee; sometimes momentary locking may have occurred. There is pain on pressing on and moving the patella over the femoral condyles. X-ray examination is seldom helpful, except in the occasional case which has progressed to the stage of patello-femoral arthritis. The majority of cases sooner, or later, undergo a spontaneous remission or cure, but there is a strong tendency for the complaint to recur. There were five recurrences among twenty-six patients treated with hydrocortisone; all, however, obtained permanent relief, following a further course of injections.

Local hydrocortisone often brought dramatic relief to patients suffering from the acute phase (supraspinatus tendinitis) of periarthritis of the shoulder, a full range of painless movement frequently being restored within 24-48 hours. Diagnosis and localization of the affected tissues, however, must be accurate (Cyriax and Troisier, 1953). Injection of unaffected tissues will bring neither relief to the patient nor credit to the surgeon. At the shoulder, the degenerative changes and secondary inflammation are present in the capsule, bursæ and tendinous cuff around the joint, and most of the hydrocortisone should be widely

distributed throughout these structures rather than injected into the joint cavity.

There is still no effective treatment for the "frozen shoulder." In the past, the ability of hydrocortisone to hasten the disappearance of established fibrous tissue has probably been over-emphasized. Once the chronic, fibrotic phase of shoulder periarthritis has become established, hydrocortisone ceases to have any worthwhile effect on the condition. As with early osteo-arthritis of joints (Leveaux and Quin, 1956) the drug may produce some slight, transient alleviation of pain, but the disease process is unaffected and pursues its usual unpredictable course.

In an investigation such as this, the statistical analysis of the results is surrounded by difficulties. The natural history of many of the conditions is very uncertain, and most of those lesions which responded to hydrocortisone are known to resolve spontaneously after a variable period of time. Unless very large numbers of patients are available for study, statistical analysis will produce false negative results, and this fact may not be apparent to those who are not acquainted with the limitations of the statistical methods employed.

The absence of any marked local reaction at the site of injection was reassuring. A small series of patients (not included in the present investigation) was treated with long-acting hydrocortisone—T.B.A. (Merck), but this compound, while satisfactory when used in joint cavities, frequently caused a severe painful reaction when injected into soft tissues. In consequence, its use has been abandoned in favour of ordinary hydrocortisone, which is now regarded as the treatment of choice in "tennis elbow," painful heel, chondromalacia patellæ, and supraspinatus tendinitis.

Summary.

1. The effects of local injections of cortisone and hydrocortisone in two hundred patients suffering from various minor orthopædic conditions were investigated.
2. The treatment produced excellent results in "tennis elbow," painful heel, chondromalacia patellæ, and supraspinatue tendinitis.
3. It was of no real value in osteoarthritis and "frozen shoulder."

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